In the Claims:

1. (Original) A device comprising a whispering-gallery-mode resonator formed of a spheroid made of an optical dielectric material and shaped with an eccentricity sufficiently large so that free spectral ranges of two different sets of whispering-gallery modes circulating along an equator of said spheroid around a short ellipsoid axis are compatible in magnitude.

2. (Original) The device as in claim 1, wherein said eccentricity is greater than 0.5.

3. (Original) The device as in claim 1, further comprising an optical coupling element disposed adjacent to said equator to evanescently couple optical energy into said resonator in at least one of said whispering-gallery modes, or out of said resonator from at least one of said whispering-gallery modes.

4. (Original) The device as in claim 3, wherein said optical coupling element includes a fiber tip with an angle-polished end facet to couple said optical energy.

5. (Original) The device as in claim 3, wherein said optical coupling element includes an optical planar waveguide with an angle-polished end facet to couple said optical energy.

6. (Original) The device as in claim 3, wherein said optical coupling element includes a prism.

7. (Original) The device as in claim 1, wherein said dielectric material is doped with active ions to produce optical

gain at a laser emission wavelength by absorbing pump light at a pump wavelength shorter than said laser emission wavelength.

8. (Original) The device as in claim 1, wherein said dielectric material is an electro-optic material, and further comprising electrodes positioned to apply an electrical control voltage to said spheroid to modulate optical energy in said resonator.

9. (Original) The device as in claim 1, wherein said spheroid has a dimension less than 10 mm.

10. (Original) A method, comprising:

providing a whispering-gallery-mode resonator formed of a spheroid made of an optical dielectric material; and

shaping the spheroid to produce a sufficiently large eccentricity so that free spectral ranges of two different sets of whispering-gallery modes circulating along an equator of said spheroid around a short ellipsoid axis are compatible in magnitude.

11. (Original) The method as in claim 10, further comprising coupling optical energy into said resonator in at least one of said whispering-gallery modes.

12. (Original) The method as in claim 10, further comprising:

coupling an output laser beam from a CW laser into said resonator in at least one of said whispering-gallery modes;

coupling optical energy out of said resonator from at least one of said whispering-gallery modes to produce a feedback signal; and

feeding said feedback signal back to said laser to control a laser frequency.

13. (Original) The method as in claim 10, further comprising using said resonator to filter an optical beam to produce a filtered optical beam in a frequency of one of said whispering-gallery modes.

14. (Original) The method as in claim 10, further comprising:

using an optical modulator to modulate a cw laser beam in response to an electrical control signal;

coupling a portion of said modulated laser beam into said resonator in at least one of said whispering-gallery modes;

converting an optical output from said resonator into an electrical signal; and

using at least a portion of said electrical signal as said electrical control signal to control said optical modulator.

15. (Original) A device, comprising:

a cw laser operable to produce a laser beam at a laser frequency;

a whispering-gallery-mode resonator formed of a spheroid made of an optical dielectric material and shaped with an eccentricity sufficiently large so that free spectral ranges of two different sets of whispering-gallery modes circulating

along an equator of said spheroid around a short ellipsoid axis are compatible in magnitude; and

a coupling element disposed adjacent to said resonator to evanescently couple said laser beam in optical energy into said resonator in at least one of said whispering-gallery modes and a feedback optical signal out of said resonator from at least one of said whispering-gallery modes into said laser to control said laser frequency.

16. (Original) The device as in claim 15, wherein said laser includes a diode laser.

17. (Original) A device, comprising:

an optical modulator operable to respond to an electrical control signal to modulate an input optical beam to produce a modulated signal;

a whispering-gallery-mode resonator formed of a spheroid made of an optical dielectric material and shaped with an eccentricity sufficiently large so that free spectral ranges of two different sets of whispering-gallery modes circulating along an equator of said spheroid around a short ellipsoid axis are compatible in magnitude; and

a coupling element disposed adjacent to said resonator to evanescently couple a portion of said modulated signal into said resonator in at least one of said whispering-gallery modes; and

a photodetector coupled to receive an optical output from said resonator to produce said electrical control signal.

18. (Original) The device as in claim 17, wherein said optical modulator includes:

a whispering-gallery-mode resonator formed of a spheroid made of an electro-optic material to receive said input optical beam; and

electrodes positioned to apply an electrical control voltage to said spheroid to modulate optical energy in said resonator to produce said modulated signal.

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19. (New) A device comprising an optical resonator formed of an optical dielectric material and including a region to support different sets of whispering-gallery modes, wherein said region of said optical resonator has a shape that is not part of a sphere.

20. (New) The device as in claim 19, further comprising an optical coupling element disposed adjacent to said optical resonator to evanescently couple optical energy into said non-spherical cavity in at least one of said whispering-gallery modes, or out of said optical resonator from at least one of said whispering-gallery modes.

21. (New) The device as in claim 20, wherein said optical coupling element includes a fiber tip with an angle-polished end facet to couple said optical energy.

22. (New) The device as in claim 20, wherein said optical coupling element includes an optical planar waveguide with an angle-polished end facet to couple said optical energy.

23. (New) The device as in claim 20, wherein said optical coupling element includes a prism.

24. (New) The device as in claim 19, wherein said optical dielectric material is doped with active ions to produce optical gain at a laser emission wavelength by absorbing pump light at a pump wavelength shorter than said laser emission wavelength.

25. (New) The device as in claim 19, wherein said optical dielectric material is an electro-optic material, and the device further comprising electrodes positioned to apply an electrical control voltage to said optical resonator to modulate optical energy therein.